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Breadth between temporal crests.....	5 in. 3 l.
“ “ frontal borders.....	6 “ 9 l.
“ of nasal meatus.....	1 “ 10 l.
“ of muzzle at notch.....	3 “ 7 l.
“ “ middle.....	2 “
Teeth.....	$\frac{49}{46}$

*Delphinus delphis.*

In four specimens (two from Mus. Salem,) the teeth vary within the above tabulated range, and have the length of muzzle from notch three times the breadth at latter point. The intermaxillaries form an elevated ridge. One specimen probably from the British seas.

*Stenofrontatus* Gray ex Cuvier.

A fine specimen from Mus. Salem (No. 102,) differs from the figure in Ossements Fossiles in that the contraction of the muzzle takes place behind the middle of its length, instead of in front of it, and the prominence of the nasal bones marks nearly the middle of the orbit instead of falling a short distance behind the postorbital process. Dimensions as follows:

	In.	Lines.
From end of symphysis mandibuli to convexity of occip. condyle...	21	
Length of symphysis.....	5	3
“ of ramus.....	16	6
End of muzzle to palatal notch.....	13	10
“ “ to preorbital notch.....	12	
Width at “ “ .....	4	3
“ of palate at first tooth.....	3	3
“ “ ninth tooth.....	1	8
“ between temporal crests.....	5	8
“ of nasal meatus.....	2	3
“ at postorbital processes.....	8	5
Teeth incurved, fang compressed.....	$\frac{21}{20}$	

*Habitat.*—Unknown.

*Platanista gangetica.*

Mus. Academy. Morton Coll.

On the Species of *GALERUCA* and allied Genera inhabiting North America.

BY JOHN L. LE CONTE, M. D.

Some of the species mentioned in the present paper are of interest in an economical view, being quite injurious to cultivated plants. Others will probably be found more or less injurious, as the advance of civilization in the western territories will from time to time enable them to substitute for their indigenous food plants useful to man.

Confusion exists in regard to the nomenclature of our species, not only because some of the most abundant have remained undescribed, but also for the reason that those already known have not been properly referred to the genera recognised in other parts of the globe; nor have definitions of the genera yet been given in any American work.

With a view of supplying the information thus needed, and enabling those interested in economic entomology to work with more effect by having the objects distinctly defined by characters and names, I have here endeavored to give in a brief synoptic form the distinctive marks of the *Galerucæ* and allied genera contained in my collection.

The tribe *Galerucini* (*Galerucidæ* of authors) consists of those *Chrysomelidæ* having the antennæ inserted upon the front, generally closely approximate, long and slender; the anterior coxæ prominent and conical, generally

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contiguous, (separated by a very narrow prosternal prolongation only in *Malacosoma*;) the margin of the body not foliaceous, and the last joint of the tarsi extending beyond the lobes of the third joint. Lacordaire (Mon. Col., subpent. i., li.) states that the ungues are always appendiculate, but in several of the genera they are cleft, and in the new genus *Monoxia* they are quite simple and acute.

The group of genera which will now occupy our attention is distinguished by the hind thighs not being thickened. They do not therefore possess the power of leaping which is observed in *Haltica* and its allies.

I have not recognized the following species:

*Galeruca dorsata* Say, Journ. Acad. Nat. Sci., iii. 456; ed. Lec., ii. 221.

*Galeruca puncticollis* Say, ibid., iii. 458; ed. Lec., ii. 222. Perhaps a species of *Monoxia*.

*Galeruca furcata* Oliv., vide *Cerotoma*.

*Galeruca atomaria* Fabr., Syst. El., i. 490. Carolina; probably a species of *Monoxia*.

*Galeruca salicis* Randall, Bost. Journ. Nat. Hist., ii. 31. Maine, on willow; probably a species of *Monoxia*.

*Galeruca femoralis* Mels., Proc. Acad. Nat. Sci. Phila., iii. 161. Appears to be a specimen of the European *G. caprea*, and has, like several others in the Melsheimer collection, been erroneously regarded as native.

The genera represented in our fauna may be thus tabulated:

I. Claws with a broad basal dilatation:

Antennæ with the 1st joint very long, and the third

longer than the 4th..... *Cerotoma*.

Antennæ with the 1st joint moderate:

Front coxæ separated by prosternum..... *Malacosoma*.

Front coxæ contiguous:

Elytra not margined at the sides..... *Phyllobrotica*.

Elytra distinctly margined:

Epipleuræ not extending to the tip:

Last joint of maxillary palpi small, subulate..... *Phyllecthris*.

Last joint of maxillary palpi conical, acute..... *Luperus*.

Epipleuræ extending to the tip:

Upper margin of epipleuræ thick, obtuse..... *Agelastica*.

Upper margin of epipleuræ very sharp, prominent *Gastrogyna*, n.g.

II. Claws cleft or acutely toothed:

Tibiæ with a deep groove on the outer side..... *Cœlomera*.

Tibiæ not sulcate externally:

Front carinated between the antennæ..... *Diabrotica*.

Front flat, with a median impressed line:

Epipleuræ extending to the tip..... *Galeruca*.

Epipleuræ not extending to the tip..... *Trirhabda*, n.g.

III. Claws acute, usually entire..... *Monoxia*, n.g.

CEROTOMA Chev.

The greater length of the first joint of the antennæ easily distinguishes this from the other genera. The body is rather robust and convex, glabrous above, with the thorax not impressed, and the epipleuræ well defined, extending nearly to the tip of the elytra, which are finely punctured. Eriohson (Wieg. Arch. 1847) describes the ungues as bifid; they are, however, appendiculate in our species.

1. *C. caminea* Dej., Cat. 403. *Crioceris caminea* Fabr., Syst. El., i. 459. *Galeruca cam.* Oliv., Ent. vi. 656, (No. 93, 72,) pl. 5, f. 73.

Southern, Middle and Western States; varies with the elytra destitute of the usual marking, the suture and scutellar region alone being dusky.

1865.]

2. *C. furcata* Dej., Cat. 403. *Galeruca furc.* Oliv., Ent. vi. 643, (No. 93, 48,) pl. 3, f. 50.

Unknown to me. Olivier mentions the locality as doubtful, and describes the thorax as having a transverse impression. I think that the reference to the present genus is therefore incorrect, and that Dejean probably had in view a variety of *C. caminea*, in which all the spots except the apical one were confluent.

#### MALACOSOMA Rosenhauer.

Easily distinguished from the other genera by the prosternum being prolonged between the front coxæ, which are thus separated by a narrow interval. The first joint of the antennæ is moderate, the 2d one-half as long as the 3d, which is equal to the 4th. The body is elongated, convex, glabrous, and nearly smooth above; the epipleuræ are well defined, and extend the length of the elytra.

1. *M. fuscula*, fusca, vel fusco-testacea, subnitida, thorace convexo, quadrato, ad basin rotundato medio submarginato, angulis posticis parvis prominulis, disco alutaceo, parce subtiliter punctulato, elytris fere obsolete punctulatis. Long. .12—.15.

Pennsylvania, Illinois and Kansas. The head is marked between the eyes with two curved deeply-impressed lines, which limit small tubercles; in front of them, and between the antennæ is a short elevated ridge; the space before the antennæ is uneven, but scarcely punctured. Antennæ half as long as the body. Palpi darker at the tip. Thorax quadrate, scarcely wider than its length, sides converging slightly in front, apex truncate, anterior angles rounded, base broadly rounded, slightly emarginate at the middle, hind angles small, laterally prominent; disc convex, transversely impressed near the base, finely shagreened with very small scattered punctures. Elytra wider than the thorax, and about four times as long, sides parallel; transversely convex, vaguely impressed near the base, surface not very shining, feebly and almost obsoletely punctulate, without brilliant reflexions. Beneath colored as above. In the male the 5th ventral segment is excavated, and furnished with a large, flat appendage, which is broadly and obtusely truncate at tip, and projects over the 6th segment. In two specimens (males) from Illinois the thorax is vaguely channelled.

2. *M. tincta*, testacea, nitida, elytris punctulatis, viridi-cyaneo suffusis, sutura margineque anguste testaceis. Long. .12—.15.

Two specimens from Quincy, Illinois, given me by Mr. Willcox. This species is of the same form and size as the preceding, but differs by the elytra being distinctly but finely punctured, with a beautiful bluish-green gloss, which fades insensibly into testaceous at the suture and margin.

The 5th ventral segment of the male is deeply emarginate, and the process is narrow and acute, instead of broad and truncate, as in *M. fuscula*.

#### PHYLLOBROTICA Redtenbacher.

Among the genera with the claws dilated at the base into a broad tooth, this will be easily known by the side margin of the elytra being entirely wanting; the epipleuræ are consequently not defined. The body is elongate, glabrous and nearly smooth above, the thorax quadrate, truncate in front. The antennæ are moderately long, with the 2d joint about half as long as the 3d, which is equal to the 4th. The maxillary palpi are stout, with the last joint conical, as long as the preceding.

1. *P. decorata* Lec., Say's Ent. writings, ii. 203. *Galleruca dec.* Say, Journ. Acad. Nat. Sci. Phila., iii. 459; ed. Lec. l. cit. *Gall. Olivieri* Kirby, Fauna Bor. Am. iv. 218.

Canada, Lake Superior, Illinois; rare. In the male, the 5th ventral segment is very large, canaliculate, deeply excavated behind, with a small testa-

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ceous triangular appendage projecting over the 6th segment. The disc of the thorax is not impressed. The reference by Kirby of *Haltica 4-maculata Oliv.*, Ent. vi. 673, pl. 1, f. 6, to this species, is more than doubtful.

2. *P. discoidea Dej.*, Cat. 405. *Galleruca disc.* Fabr., Syst. El., ii. 485. *Gall. circumdata* Say, Journ. Acad. Nat. Sci. Phila., iii. 457; ed. Lec. ii. 221. Var. *G. limbata*, Fabr., Syst., El. ii. 486.

Throughout the Atlantic States and Canada. Both Fabricius and Say describe the antennæ as black; the basal joints are quite frequently yellow, and I have specimens in which the antennæ are yellow and slightly fuscous towards the tip. The color also varies, the head and thorax in one specimen being black, and the under surface dark testaceous varied with piceous, the thighs blackish, the tibia and base of tarsi testaceous. The thorax has a broad transverse discoidal impression, which is sometimes disposed to divide into two.

In the male, the 5th ventral segment is very large, very deeply excavated, with a small elevated ridge in front of the excavation; the 6th is deeply excavated; the smaller males from Canada also have the antennæ quite sensibly thickened externally.

A singularly-colored specimen, collected in Kentucky, was given me by Mr. J. Ph. Wild. The head is black, with the front and mouth pale yellow. The thorax is bright yellow, the elytra black, with the sutural, lateral and apical margin yellow, and a small humeral vitta extending one-fourth the length of the elytra; the abdomen is black both above and beneath, ventral segments margined with piceous, the tip yellow; the feet are bright yellow, with the tarsi black.

3. *Ph. viridipennis. Diabrotica virid.* Lec., Proc. Acad. Nat. Sci. Phila., 1859, 81.

Fort Tejon, Cal.; Mr. Xantus. A beautiful species, having the thorax strongly impressed. The 5th ventral segment of the male is excavated for its almost entire surface, and is neither channelled nor carinated.

4. *Ph. luperina, nigra*, thorace lævi quadrato, utrinque vage impresso, elytris cyaneis, parce subtiliter punctatis, antennis testaceis extrorsum infuscatis, pedibus flavis, femoribus piceæ maculatis. Long. .26.

One specimen, collected at San Mateo, Cal., given me by Mr. A. Agassiz. The discoidal impression of the thorax is vague, and scarcely extends to the middle, so that it appears to be divided into two. This insect closely resembles in appearance a *Luperus*.

#### PHYLLECHTHRUS †Dej.

Body elongate, glabrous and nearly smooth above. Head transversely impressed between the eyes, and with a short median impressed line; acutely carinate between the antennæ, which are very long; 2d and 3d joints together shorter than the 4th, nearly equal in size in the female, 2d connate with the 3d, and nearly obsolete in the male. Maxillary palpi stout, the last joint shorter than the preceding, slender, subulate, acute at tip. Prothorax quadrate, truncate at the apex, with a lunate dorsal impression more or less distinct. Elytra with the lateral margin distinct, epipleuræ very narrow, not extending to the tip. Anterior coxæ conical, contiguous; legs slender, tibiæ not sulcate externally, middle tibiæ of the male incised at the extremity on the inner margin; unguis with a large angular basal dilatation. Abdomen with five ventral segments nearly equal in length and alike in both sexes.

I have adopted the generic name proposed in Dejean's Catalogue for *Gall. dorsalis Oliv.*

1. *Ph. atriventris. Gall. atriventris* Say, Journ. Acad. Nat. Sci. Phila., iii. 461; (ed. Lec., ii. 224.)  
1865.]

I found this species quite abundant near the Arkansas River, below Bent's Fort. Say states that it lives on *Amorpha fruticosa*. It differs from the next by the head and thorax being entirely yellow, with the impression of the latter tolerably deep, as in *Phyllobrotica decorata*.

2. *Ph. dorsalis* Dej., Cat. 406. *Galleruca dors.* Oliv., Ent. vi. 646, (No. 93, 52,) pl. 4, f. 54.

Two specimens from Kansas; is also found in the Southern States. Of the same size, form and sculpture as the preceding, but the discoidal impression of the thorax is very faint, and it is marked with two black vittæ, which sometimes unite along the anterior margin, thus causing the anterior part of the thorax to become blackish; the tibiæ and tarsi are entirely black.

3. *Ph. gentilis*, elongatus, nitidus flavo-testaceus, supra lævis, thoracæ quadrato, dorso vage transversim impresso, vittis duabus latis nigris ornato, elytris nigris, sutura margine laterali apicalique anguste flavis: antennis fuscis, articulis 4 et 5 testaceis. Long. .15.

Three specimens; Georgia. A very pretty little species, easily distinguished by the characters given above. The discoidal impression of the thorax is faint; the under surface of the body is yellow, with the last ventral segment of the abdomen fuscous. The legs are entirely yellow. The sexual characters are as in the two preceding species.

#### LUPERUS Geoffr.

The species of this genus as now restricted will be readily recognised by the elongate form, the quadrate thorax, without discoidal impression, and the epipleuræ moderately wide at base, not extending to the tip of the elytra. The body is glabrous, shining and nearly smooth above. The antennæ are 11-jointed in both sexes; the 2d joint is shorter than the 3d, but the latter is not equal to the 4th. The maxillary palpi are rather slender, with the last joint as long as the preceding, gradually narrowed to the tip, which is rounded. The thorax is truncate at the apex, slightly rounded on the sides, nearly truncate at base, with the hind angles acute and laterally prominent. The front coxæ are conical and contiguous; the legs are slender, the tibiæ not sulcate externally, and the unguis have a broad acute basal dilatation.

In the males the antennæ are a little longer than in the females, and the 5th ventral segment is broadly impressed and truncate at the tip.

Our species may be distinguished as follows:—

##### A. Prothorax yellow:

Yellow, elytra black, pectus and abdomen fuscous..... 1. *thoracicus*.

Yellow, occiput, base of elytra and transverse spot behind

the middle fuscous, pectus black..... 2. *fibulatus*.

Yellow, elytra with suture and submarginal vitta black. 3. *bivittatus*.

Blue shining, prothorax yellow, post pectus black..... 4. *flavicollis*.

##### B. Body uniform in color.

\*Hind angles of prothorax not prominent, but acute:

Prothorax sparsely punctulate, hind angles not prominent:

Legs entirely black..... 5. *smaragdulus*.

Legs varied with testaceous ..... 6. *varipes*.

Prothorax convex nearly smooth:

Legs varied with yellow..... 7. *cyanellus*.

\*\*Hind angles of thorax acute, dentiform.

Thorax wider than long:

Elytra smooth, legs yellow..... 8. *rufipes*.

Elytra punctulate, thighs varied with black..... 9. *meraca*.

Thorax longer than wide, legs black..... 10. *longulus*.

\*\*\*Hind angles of thorax obtuse:

Body entirely black, elytra punctulate..... 11. *morulus*.

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1. *L. thoracicus*. *Calomicrus thor.* Mels., Pr. Acad. Nat. Sc. Phil. iii. 162. Pennsylvania, Georgia, Kansas; rare. Somewhat less elongated than the other species, and resembling in appearance *Haltica collaris* Fabr. The second and third joints of the antennæ united are longer than the fourth; the elytra are black, slightly bronzed, and strongly but finely punctured. The thorax is transverse, of a pale yellow color.

2. *L. fibulatus*. *Galleruca fib.* Germ., Ins Nov. 601; ?*Gall. 4-notata* Oliv., Ent. vi. 665 (No. 93, 89); pl. 5, f. 90.

A specimen from Pennsylvania, given me by Dr. Melsheimer. It agrees perfectly with the figure and description of Olivier above cited, but the locality as given by him is Java. The type was contained in Bosc's collection, which contained many United States species, and it is quite possible that the locality became confused.

Germar does not mention that the occiput is dark-colored; otherwise, his description applies to the specimen before me.

3. *L. bivittatus*. *Phyllobrotica biv.* Lec., Pr. Acad. Nat. Sc. Phil., 1859, 81.

California; first collected by Mr. Xántus at Fort Tejon.

4. *L. flavicollis*. *Phyllobrotica flav.* Lec., Pr. Acad. Nat. Sc. Phil., 1859, 81.

Also found at Fort Tejon, Cal., by Mr. Xántus. The sexual characters are as in the following species.

5. *L. smaragdinus* Lec., Proc. Acad. Nat. Sc. Phil., 1859, 286.

Capes Reyes and Mendocino, California; Mr. G Davidson. Differs from the next by the less densely punctulate thorax, and entirely black legs.

6. *L. varipes* Lec., Report Pac. R. R. Expl., p. 69.

San Francisco, California; not rare.

7. *L. cyanellus*, elongatus, supra cyaneus nitidus, thorace latitudine brevior, angulis anticis rotundatis, posticis rectis haud prominulis, disco convexo punctulis paucis fere obsoletis versus latera impressis, elytris parce fere obsolete punctulatis; subtus niger, pedibus flavis, antennis fuscis articulis 4 primis flavis. Long. .15—.20.

Western States; Michigan, Illinois. Differs from the two following by the brighter color, and by the thorax being broader than its length, with the hind angles not prominent. The antennæ and feet vary in color, the thighs being sometimes marked with a black line; and the antennæ being sometimes entirely yellow.

8. *L. rufipes* Lec., Col. Kansas and New Mexico (Smithsonian Contr.,) p. 27.

Santa Fé, N. Mexico; collected by Mr. Fendler. Of the same size and color as *L. meraca*, but differs by the elytra being obsoletely punctulate, and the feet uniform yellow. The sides of the thorax are less rounded, the front angles not at all prominent, and the hind ones not so dentiform.

9. *L. meraca*. *Galleruca mer.* Say, Journ. Acad. Nat. Sc. Phila., v. 299; ed. Lec. ii. 344.

Pennsylvania, Illinois, Kansas, Georgia; not rare. The anterior angles of the thorax are acute, the hind ones dentiform, the elytra finely punctulate, the antennæ uniformly yellow, and the feet yellow, with the thighs more or less varied with piceous.

10. *L. longulus* Lec., Report on Pacific R. R. Expl., p. 69.

One specimen, Oregon. Narrower than the preceding species; the thorax is longer than wide, with the front angles not prominent, the hind angles dentiform, and the disc finely and sparsely punctulate each side and at the 1865.]

base; the elytra are scarcely punctulate; the antennæ and feet are entirely black.

11. *L. morulus*, elongatus, niger nitidus, thorace latitudine paulo brevior, quadrato, angulis omnibus subrectis haud prominulis, disco obsolete parce punctulato, utrinque versus latera leviter impresso, elytris thorace latioribus, parce fere obsolete punctulatis; antennarum articulo 3io 2ndo vix longiore, conjunctis 4to æqualibus. Long. .4.

Texas; I owe three specimens to the liberality of Mr. Ulke. This species differs from all the preceding by the third joint of the antennæ being scarcely longer than the second, and both united are not longer than the fourth. I infer from European works that it represents the genus *Calomicrus* Stephens, of which Redtenbacher observes, that he finds no difference between it and *Luperus*, except the equality of the second and third joints of the antennæ in the former.

In the three specimens before me, the ventral segments 1—4 are nearly equal in length, and the fifth is much longer, marked with two distant deeply impressed lines extending from the hind margin nearly to the base of the segment. The antennæ are more than two-thirds the length of the body, and I consider them all as males.

#### AGELASTICA Redt.

The body in this genus is ovate and convex, resembling in form *Oedionychis* among the allies of *Haltica*. The head is deeply channelled between the eyes, and the usual transverse sinuated line is faint; the front between the antennæ is scarcely elevated. The antennæ are rather long and stout, with the second joint half as long as the first, the third is a little longer than the second, and both together are longer than the fourth. The maxillary palpi are very stout, the last joint is shorter than the preceding, conical, scarcely longer than its width at base. Prothorax transverse, broadly emarginate in front, and rounded at base, with the angles not prominent. The disc is marked each side with a deep excavation. Elytra convex, dilated behind, obtusely rounded at tip, marked with two foveæ at base; epipleuræ distinctly defined, extending to the tip; lateral margin thick and obtuse toward the tip. Anterior coxæ conical, prominent, contiguous; tibiæ not sulcate externally, ungues with a broad angular basal dilatation.

The characters of this genus are not very well defined, but its more robust form and stronger sculpture will enable it to be readily distinguished.

1. *A. halensis*, rufo-testacea, occipite cyaneo, thorace transverso nitido, utrinque profunde excavato, elytris læte cyaneis, fortiter licet subtiliter punctatis, antennis nigris, pedibus rufis, tibiis apice tarsisque nigro-piceis. Long. .20 — .28.

Redt. Faun. Austr. 2d ed. 930. *Chrysomela hal.* Linn. *G. nigricornis* Panz., &c.

Two specimens of this common European species were given me as collected at Farmington, Connecticut, by Mr. Edward Norton.

#### GASTROGYNA Lec.

Body different in form in the two sexes, above glabrous, nearly smooth. Head with a short medial impressed line between the eyes; front before the antennæ transversely broadly impressed, labrum large, not emarginate. Maxillary palpi slender, last joint longer than the preceding, pointed at tip. Antennæ long and rather stout, second joint one-third as long as the first, third somewhat shorter than the fourth; eyes small, rounded, not very prominent. Prothorax transverse, truncate in front and behind, sides nearly straight, front angles prominent, but rounded at tip, hind angles not prominent, slightly obtuse. Elytra elongate and parallel in the male, wider

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than the thorax, flat and broadly separately rounded at the tip in the female; punctured in both sexes, with the lateral margin acute, and the epipleuræ well defined, extending nearly to the tip. Anterior coxæ prominent, conical, contiguous; tibix not sulcate externally, tarsi with the last joint as long as the first, unguis with a large obtusely rounded basal dilatation.

In the male, the antennæ are as long as the elytra, which extend a little beyond the abdomen; wings perfect.

In the female, the antennæ extend to the tips of the elytra, but the abdomen is enormously inflated, and more than twice the length of the elytra; wings wanting.

1. *G. insolita*. *Diabrotica? insolita* Lec., Proc. Acad. Nat. Sc., Phil., 1861, 338.

Cape San Lucas, Lower California; Mr. Xántus. The head, thorax and elytra are muddy yellow; the elytra distinctly punctured, with a humeral spot, and another behind the middle black; the scutellum, tibix, tarsi, palpi and antennæ are black, the thighs testaceous, the postpectus and abdomen blackish piceous.

#### CÆLOMERA Chev.

Erichson (Wieg. Arch., 1847) desires to restrict this genus to those species in which the antennal joints 5—10 are much shorter than the 4th. A more valuable character appears to me to be the deep groove on the outer face of the tibix, which distinguishes this from all the other genera represented in our fauna. The maxillary palpi are rather stout, with the last joint as long as the preceding, but narrower, subconical, and rounded at the tip. The claws are cleft, with the inner part shorter, but as broad as the outer, and acute at tip. The epipleuræ are very narrow, and do not extend to the tip. The body above is glabrous and nearly smooth.

1. *C. coryli*. *Galleruca cor.* Say, Journ. Acad. Nat. Sc. Phil., 3, 455; ed. Lec. ii. 220.

Middle, Western States, and Kansas. Mentioned by Say as feeding on hazel bushes. I have never collected this species, but have received it from several friends. It is easily known by its large size, pale color, with broad basal and subapical bands of a bluish black color on the elytra. The elytra of the male are parallel at the sides, those of the female are considerably dilated from the base for two-thirds the length, then obtusely rounded. In the only male before me, the elytra are longer than the abdomen, and the extremity is longitudinally compressed and elevated; this is probably an individual deformity. The last ventral segment is deeply cleft in the male, but less so in the female.

Specimens occur with the dark bands badly defined, and sometimes entirely wanting.

#### DIABROTICA Chev.

This genus contains small species, with elongate body, glabrous above, and generally nearly smooth, though sometimes with deep elytral striæ. The head is marked with a deep transverse impression, or a large fovea, between the eyes, and the front is strongly carinated. The maxillary palpi are not very stout, the last joint is conical, acute, and somewhat shorter than the preceding (but scarcely subulate, as described by Erichson, Wieg. Arch., 1847). The antennæ are moderately long, the third joint is sometimes equal to the second, sometimes longer, but both united are not longer than the fourth. The thorax is sometimes even, sometimes deeply impressed each side of the middle. The elytra are sometimes elongate and parallel, sometimes convex and ovate; the epipleuræ are well defined, but do not extend to the tip. The legs are slender, the tibix not sulcate externally, the claws cleft, the inner part nearly equal to the upper one.

1865.]

Our species can be arranged in four natural groups, of which the fourth seems to be equivalent to the European genus *Rhapidopalpus* *Rosenh.*

A. Thorax without distinct impression, third joint of antennæ longer than the second. (Group 1.)

Elytra yellow, with three broad bands and apex black..... 1. *tricincta*.

Elytra with two transverse bands, and two posterior spots on each, brown..... 2. *connexa*.

B. The third joint of antennæ equal to the second:

a. Elytra not striate; thorax with two faint impressions. (Group 2.)

Elytra with twelve large black spots.....

Abdomen and base of thighs yellow..... 3. *12-punctata*.

Abdomen and legs entirely black..... 4. *soror*.

Elytra with twelve small black spots..... 5. *tenella*.

Elytra with transverse pale green bands..... 6. *balteata*.

b. Thorax with two very deep impressions:

\*Elytra deeply striate. (Group 3.)

Elytra pale, with suture and submarginal vitta black:

Knees and tarsi black..... 7. *vittata*.

Legs black, femora pale at the base..... 8. *trivittata*.

\*\*Elytra carinate towards the sides. (Group 4.)

Greenish yellow, elytra strongly punctured and subsulcate..... 9. *longicornis*.

Black, elytra sparsely punctulate, prothorax yellow or black..... 10. *atripennis*.

1. *D. tricincta* *Lec.*, Say's Ent. ii. 222. *Galleruca tric.* Say, Journ. Acad. Nat. Sc. Phil. iii. 457; ed. Lec. ii. 221.

Abundant along the Arkansas river, near the mountains: a specimen was sent me from Arizona, by Dr. B. J. D. Irwin, U. S. A.

2. *D. connexa*, rufo-flava, nitida, capite fusco, elytris postice latioribus, convexis, basi, fascia transversa ad medium, guttisque utrinque posticis duabus rufo-fuscis, fascia basali et mediali vitta angusta convexis; postpectore tibiis tarsisque obscuris, antennis fuscis basi pallidis. Long. .28.

One specimen from Rio Grande, Texas. Of the same size and form as *D. 12-punctata*, but differing by the elongated third antennal joint, and by the elytral markings, which are thus arranged; a basal band extending from the suture to the reflexed margin, another at the middle slightly oblique, connected with the first by a short longitudinal stripe near the side; two rounded spots behind the middle, placed transversely, the outer one being smaller and a little posterior. The thorax is quadrate, a little longer than its width, smooth, and without impressions. The antennæ are fuscous, with the first three joints pale; the second is only one-third the length of the third, which is as long as the 4th. The thighs are yellow, the tibiæ and tarsi fuscous; the postpectus piceous. The scutellum is of the color of the elytral bands.

3. *D. 12-punctata* *Dej.*, Cat. 405; Mannh. Bull. Mosc., 1843, 309. *Chrysomela*, *Galleruca* et *Crioceris 12-punct.* Fabr.; *Galleruca 12-punct.* Oliv. Ent. vi. 628 (No. 93, 23), pl. 2, f. 31.

Abundant throughout the Atlantic district from Canada to Mexico; varieties sometimes occur, having the spots more or less confluent longitudinally. The first three joints of the antennæ are yellow, the abdomen and base of the thighs are also yellow.

4. *D. soror*. *Diabrotica 12-punctata*, var., Mannh. Bull. Mosc., 1843, 309.

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California, Oregon, and Arizona. This species represents the preceding in the Pacific district, and only differs from it by the under surface, the legs and the antennæ being black. I have observed no transition between the two forms, and since in this, as in other genera of Chrysomelidæ, the distribution of color is an important specific character, I am obliged to admit it as a distinct species.

5. *D. tenella* Lec., Proc. Acad. Nat. Sc. Phil., 1850, 88.

Fort Yuma, Colorado River, California. Colored like *D. 12-punctata*, but the elytral spots are very small.

6. *D. balteata*, elongata, pallida, nitida, thorace biimpresso, elytris subtilius punctatis, fasciis tribus pallide viridibus ornatis, antica versus basin vitta emittente; occipite antennisque rufo-fuscis, his articulis tribus baseos pallidis; postpectore, tibiis tarsisque fuscis. Long. .23.

One specimen from the Rio Grande, Texas. A very beautiful and delicately-tinted species; the second transverse band of the elytra is a little behind the middle, and is limited each side by oblique impressions.

7. *D. vittata* Dej., Cat. 405. *Crioceris vitt.* Fabr., Ent. Syst. i. 2, 12; El. i. 455; *Galleruca vitt.* Oliv., Ent. vi. 633; Enc. Méth. vi. 590; Harris Ins. Inj. Veg. 2d ed., 124; Shimer, Prairie Farmer, xvi. 109.

Abundant in the Atlantic States; quite destructive to cucumber vines and other cultivated Cucurbitaceæ. The two thoracic impressions become confluent at the middle; the elytral striæ are very deep; the legs are yellow, with the knees, the tips of the tibiæ and the tarsi black.

8. *D. trivittata* Mannh., Bull. Mosc., 1843, 309.

California. Closely resembles the preceding, but the impressions of the thorax are smaller and not confluent; the striæ of the elytra are less deep, and less strongly punctured; the feet are black, with the base of the thighs pale; the antennæ are entirely black.

9. *D. longicornis* *Galleruca long.* Say, Journ. Acad. Nat. Sc. Phil., iii. 460; ed. Lec. ii. 223.

Illinois and Kansas; differs from the next species by the elytra being densely punctured, with traces of faint striæ.

10. *D. atripennis* *Galleruca atr.* Say, Journ. Acad. Nat. Sc. Phil., iii. 461; ed. Lec. ii. 224. Prothorax and abdomen yellow.

Var. a. Body black, prothorax yellow, with a broad dorsal black vitta. *Galleruca* (*Adimonia*) *cristata* Harris, Hartford Tr. Nat. Hist. Soc. 90.

Var. b. Body entirely black. *D.?* *fossata* Lec., Pr. Ac. Nat. Sc. Phil., 1858, 88.

The type occurs in Kansas; var. a. throughout the Atlantic States, and var. b. in Texas, Illinois, and at Lake Superior. After careful examination, I can find no differences but those of color.

#### GALERUCA Geoffr.

This genus, by an error of spelling, is usually known as *Galleruca*, and is restricted to species which are punctured, and more or less pubescent above. The front is not carinated between the antennæ; the maxillary palpi are rather stout, with the last joint conical; the third joint of the antennæ is equal to the fourth and longer than the second. The epipleuræ extend to the tip of the elytra, except in *G. xanthomelæna*, where the lower margin becomes obsolete behind, without uniting with the upper margin, and in *G. infusata* and *morosa*, where the upper margin is obtuse, and becomes obsolete near the tip. The front coxæ are contiguous, conical and prominent; the tibiæ are not sulcate, the claws are acutely toothed, or may be regarded as cleft, with the lower part much shorter than the upper.

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Our species are numerous, and may be grouped as follows, in a tolerably natural manner, though intermediate forms occur. The relation between the groups and the sexual characters does not appear to be as precise in our species as it was found by Suffrian in those of Europe. (Vide Stettin Ent. Zeit., 1843, p. 91.)

- A. Extreme margin of elytra acute ;  
 a. Body above coarsely punctured, glabrous or slightly pubescent :  
 \*Marginal sulcus not distinct from the margin. (Group 1.)  
   Black, elytra costate, margined with yellow.....1. *externa*.  
   Testaceous, elytra usually with black vittæ :  
     Elytra cribrate-punctate, thorax shining.....2. *cribrata*.  
     Elytra cribrate-punctate, thorax opaque.....3. *americana*.  
     Elytra densely coarsely punctured, thorax opaque 4. *conferta*.  
     Elytra densely less coarsely punctured, thorax  
       opaque.....5. *sexvittata*.  
 \*\*Marginal sulcus distant from the margin, which is  
   thickened, (color uniform dark red.) (Group 2.)  
   Body ovate, convex ; elytra cribrate-punctate :  
   Thorax shining, deeply excavated.....6. *cavicornis*.  
   Thorax opaque, deeply excavated.....7. *rufosanguinea*.  
   Body elongate, elytra densely punctured.....8. *hæmatica*.  
 b. Body above not very coarsely punctured, sericeous  
   pubescent ; never ovate convex : (Group 3.)  
   Base of thorax sinuate each side near the angles.....9. *tuberculata*.  
   Base of thorax obliquely truncate each side :  
     Thorax shining, with two deep excavations ; sutural  
     angle of elytra prominent, side margin yellow :  
       Elongate, elytra rather finely punctured.....10. *punctipennis*.  
       Elytra less finely punctured :  
       Elongate, angles of thorax scarcely prominent.....11. *marginella*.  
       Less elongated, angles of thorax prominent.....12. *sagittaria*.  
       Thorax opaque, bifoveate ; sutural angle not  
       prominent :  
       Elytra not densely punctured, color brown.....13. *decora*.  
       Elytra not densely punctured, color entirely  
       black.....14. *carbo*.  
       Elytra testaceous, with four black lines on each :  
         1st and 2d vittæ confluent behind the middle 15. *notulata*.  
         2d vitta very short, basal.....16. *notata*.  
         2d and 4th vittæ entire.....17. *integra*.  
 c. Body above finely punctured, moderately pubescent,  
   inferior margin of epipleuræ obsolete near the tip. (Group 5.).....18. *xanthomelæna*.  
 B. Lateral margin of elytra obtuse, but slightly prominent.  
   (Group 6.)  
   Elytra with very short pubescence.....19. *maritima*.  
   Elytra with moderately long pubescence.....20. *morosa*.

#### Group I. ADIMONIA Laich.

In this group the body is usually stout, ovate and convex, with the elytra dilated behind, scarcely pubescent, and generally very coarsely punctured ; the thorax is short, narrowed in front, rounded on the sides, with the angles frequently not prominent or dentiform. The wings are perfect in all our species, though some European species are destitute of those organs.

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1. *G. externa* Say, Journ. Acad. Nat. Sci., Phila., iii. 458; ed. Lec., ii. 222. *Adimonia ext.* Lec., *ibid.*; *G. rudis* Lec., Rep. Pacific R. R. Expl., 69.

Kansas and Oregon; those from the former locality are more coarsely punctured, but do not show any specific differences.

The fifth ventral segment in both sexes is marked with two large impressions, and in the male is emarginate at tip.

2. *G. cribrata*, ovata, convexa, sordide rufo-testacea nitida, thorace brevi antrorsum angustato, lateribus rotundatis, angulis haud prominulis, basi utrinque oblique truncato, disco haud dense punctato, vage 3-foveato et ad angulos posticos oblique impresso, elytris fortiter cribratim punctatis, sæpe vittis angustis tribus utrinque ornatis; margine laterali fortius reflexo: antennis extrorsum infuscat. Long .21—.28.

Massachusetts, Georgia, Pennsylvania, Illinois, Kansas. The black vittæ are very narrow, and extend from the base almost to the tip; the outer one is very frequently obsolete, and often all are completely wanting. Sexual characters as in *G. externa*, except that the impressions of the fifth ventral segment are transverse and smaller.

3. *G. americana* Fabr., Syst. El. i. 489; Oliv., Ent. vi. 636, (No. 93, 36,) pl. 3, f. 43.

Middle States, Illinois, Lake Superior. Of the same form as the preceding, but generally a little smaller, and the elytra are clothed with coarse pubescence. The punctuation of the elytra is equally coarse, but the sides are not so strongly margined; the thorax is more punctured, the hind angles are not flattened by oblique impressions, and are somewhat prominent; the three discoidal impressions of the thorax are fuscous; the suture of the elytra and three narrow vittæ on each are blackish; the inner one is sometimes obsolete. Last ventral segment with a transverse impression each side; tip emarginated in the male.

4. *G. conferta*, elongato-ovata, minus convexa, sordide testacea haud nitida, thorace brevi antrorsum angustato, angulis haud prominulis, lateribus rotundatis, basi utrinque oblique truncato, disco late canaliculato, vage bimpresso, fusco trimaculato, confertim subtilius punctato; elytris dense fortiter punctatis brevissime parce pubescentibus, fortius marginatis, vittis utrinque tribus nigris, intermedia postice abbreviata; antennis fuscis, articulis 3 primis testaceo-maculatis; abdomine fusco, cinereo pubescente. Long .21.

Canada and Illinois; two specimens. This species has the elongate form of *G. notulata*, but is more dilated posteriorly; the elytra are densely but coarsely punctured, the pubescence is very short, and not conspicuous. The last ventral segment is transversely impressed each side, as in the preceding species.

5. *G. sexvittata*, elongata, supra obscure testacea opaca, thorace brevi antrorsum angustato, lateribus rotundatis, angulis haud prominulis, dense minus subtiliter punctato, subcanaliculato, utrinque late impresso, vitta dorsali maculaque utrinque nigris; elytris dense punctatis, (punctis antice fortioribus), vittis utrinque tribus nigris fere integris ornatis; vitta capitis, antennisque nigris, femoribus medio, tibiis apice tarsisque nigris. Long .24.

One male from Pennsylvania; the fifth ventral segment is transversely impressed each side, and slightly emarginate at tip. This species resembles *G. conferta*, but is more finely and densely punctured.

#### Group II. ADIMONIA p. Laich.

In two of the species of this group the body is ovate and convex, but in the third the form is elongate; the upper surface is coarsely punctured, and the pubescence very short and indistinct; the thorax is deeply channelled, and 1865.]

has a large excavation each side; the anterior angles are prominent, and the base each side is sinuate. The superior epipleural margin is acute, but not prominent, the margin of the elytra being thickened, and the marginal sulcus somewhat remote from the extreme margin. The last ventral segment in both sexes is transversely impressed each side, but in the male is deeply excavated and emarginate behind, the outline of the emargination being rounded and not angular. They are all of a dull red color.

6. *G. cavicollis*, obscure sanguineo-rufa, ovata convexa, thorace nitido, brevi, lateribus subangulatis, angulis omnibus prominulis, basi utrinque profunde oblique sinuato, disco cribratim punctato, profundo canaliculato, et utrinque late excavato, elytris parce brevissime pubescentibus sat dense cribratim punctatis; antennis nigris, tarsis fuscis. Long. .21.

One specimen from North Carolina, Dr. C. Zimmermann. This species must be very similar to the European *G. sanguinea*, but I have had no opportunity for comparison.

7. *G. rufosanguinea* Say, Journ. Acad. Nat. Sci., Phila., v. 299; ed. Lec., ii. 343; *Adimonia ruf.* Lec., ibid. 344.

Middle and Southern States. Of the same convex form as the preceding, but not at all shining.

8. *G. hæmatica*, sanguineo-rufa, elongato-ovata, minus convexa, thorace nitido, brevi, lateribus late rotundatis, angulis omnibus prominulis, basi utrinque oblique sinuato, disco cribratim punctato, profunde canaliculato, et utrinque valde excavato, elytris opacis, parce brevissime pubescentibus, conferit fortiter punctatis, antennis nigris, pedibus nigris plus minusve rufis. Long. .20—.22.

Quebec, Canada, Mr. W. Couper; also found in Illinois, and at Fort Liard, Hudson Bay Territory. The last ventral segment of the male is deeply excavated, the excavation limited by a sharp edge, which is curved in front and not angulated.

### GROUP III.

Oval or elongate species, less convex than most of those of the preceding groups, and clothed above with a fine sericeous pubescence; the punctures are never very coarse, the angles of the prothorax are frequently prominent, and the marginal sulcus of the elytra is broader than usual, causing the margin itself to appear thinner and more reflexed, except in *G. tuberculata*, where the sulcus is somewhat separated from the margin, and the latter is slightly thickened, though much less so than in Group II.

The species are found exclusively upon aquatic plants, and, with the exception of the small species allied to *G. decora*, are easily defined and recognized.

9. *G. tuberculata* Say, Journ. Acad. Nat. Sci. Phila., iii. 456; ed. Lec., ii. 220; *Adimonia tub.*, Lec., ibid.

Middle and Western States; distinguished by its larger size, and slightly thickened elytral margin; the sutural angle of the elytra is not prominent; the base of the thorax is obliquely sinuate near the sides.

The fifth ventral segment in the male is narrowly incised at tip, and canaliculate nearly to the base.

10. *G. punctipennis* Mannh., Bull. Mosc. 1843, 308.

California, two specimens kindly sent me by Col. Motschulsky. Of the same elongate form as the next species, with the front angles of the thorax scarcely prominent, and with the sutural angle of the elytra equally prominent; they are, however, more finely punctured, and the punctures become smaller towards the sides and tip.

The fifth ventral segment of the male is acutely emarginate.

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11. *G. marginella* Kirby, Faun. Bor. Am. iv. 220; ?*G. luctuosa* Mannh., Bull. Mosc. 1865, 368; *ibid.* 1853, 259.

I refer a specimen of narrow form, and .25 unc. long., from Fort Simpson, Hudson Bay Territory, to this species. It differs from the next by its more elongate form and scarcely prominent anterior angles of the thorax. The body beneath is black, clothed with silvery hairs, legs brown, tibiae and tarsi paler. This species should probably not be separated from *G. nymphaea* Fabr., Ent. Syst., i. 2, 21; Syst. El., i. 486. Oliv. Ent., vi. 643, (No. 93, 49,) pl. 3, fig. 51, &c., &c. *Chrysomela nymphaea* Linn.

12. *G. sagittariae* Gyll., Ins., iii. 511, &c., &c. Redt., Fauna Austr., 2d ed., 928.

Found throughout the middle and northern parts of the Atlantic district. I refer to this species the rather stoutly-formed specimens with punctured elytra and well marked sutural angle, which occur abundantly on *Nymphaea* and *Nuphar*; the prothorax is polished, with scattered large punctures; the dorsal channel is well marked, and the two discoidal excavations large and deep; the sides are subangulated, and the anterior angles prominent; the base is obliquely truncate each side, as in the two preceding species; the disc is yellow, usually with three large blackish spots. The pubescence of the elytra is very short, and the margins yellow-testaceous. The under surface is dusky, the tip of the abdomen pale; the legs testaceous, with part of the thighs and outer portion of tibiae and tarsi dusky.

The last ventral segment of the male is deeply and acutely emarginate.

13. *G. decora*, longiuscula, fusca vel picea, dense sericeo-pubescent, thorace opaco, subtiliter dense punctato, canaliculato, utrinque late foveato, lateribus late rotundatis, angulis omnibus valde prominulis, basi utrinque oblique truncato, elytris haud dense punctatis, angulo suturali apice rotundato; subtus nigro-picea, pedibus obscure testaceis. Long. .19—.21.

Say, Long's Exp. St. Peter's, ii. 294: ed. Lec. i. 195.

Abundant at Lake Superior, Slave Lake, and in Canada; found also in Mass. and Illinois.

This species varies considerably in color and sculpture; the lighter-colored specimens have the thorax yellow with three black spots, and the elytra margined with yellow; the thoracic angles are usually very prominent, but sometimes are less conspicuously so; the elytra are sometimes very strongly and uniformly punctured: sometimes the punctures towards the tip are less impressed. I have not been able to discover any constant differences sufficient to lead to a division of the species into races.

The fifth ventral segment of the male is deeply excavated, the margin of the excavation being acute and elevated, almost as in *G. haemastica*.

14. *G. carbo* Lec., Proc. Ac. Nat. Sci. Phila., 1861, 358.

Oregon, east of Fort Corville, G. Gibbs, Esq. Only differs from the preceding by the color, which is entirely black. It should probably be considered as a race of *G. decora*.

15. *G. notulata* Fabr., Syst. El., i. 489; Oliv. Ent., vi. 636, (No. 93, 37,) pl. 3, fig. 44.

Found throughout the Atlantic district. Of the same form and sculpture as *G. decora*, but differing in color, which is dirty testaceous above, with an occipital line, three thoracic spots, and four narrow lines on each elytron black; the subsutural vitta extends from before the middle nearly to the tip, where it unites with the submarginal one; the second vitta is oblique, and becomes confluent with the subsutural one behind the middle.

I think that *G. bilineata* Kirby, Faun. Bor. Am., iv. 220, is a specimen of this species with indistinct markings.

The fifth ventral segment is impressed transversely each side in both sex, and is tolerably strongly emarginate at tip in the male.

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16. *G. notata* Fabr., Syst. El., i. 488. Oliv. Ent., vi. 637, (Nos. 93, 38,) pl. 3. fig. 45.

Also widely diffused in the Atlantic district. Of the same form and color as the preceding, but the first, third and fourth black stripes of the elytra reach neither the base nor the tip, and the second one is very short, extending from the base only about one-sixth the length. The elytra are rather more finely punctured.

The last ventral segment is transversely impressed each side, and in the male is acutely but not deeply emarginate at tip.

17. *G. integra*, elongata, minus convexa, supra subtiliter at dense pubescens, sordide testacea subopaca, thorace brevi, lateribus rotundatis, angulis haud prominulis, dense subtiliter punctato vix canaliculato, utrinque vage impresso, vitta dorsali punctoque utrinque discoidali nigris, elytris dense punctatis, punctis postice subtilioribus, vittis utrinque quatuor angustis nigris, quarum secunda et quarta integris, apice conjunctis; tarsis fuscis, antennis piceis basi testaceo-maculatis. Long. .22.

Two specimens; Pennsylvania.

More elongated and less convex than the two preceding species, with the vittæ of the elytra differently arranged; the subventral one reaches neither the base nor the tip; the second and fourth commence at the base and unite near the tip; the third is a little abbreviated behind.

The fifth ventral segment of the male is deeply and acutely emarginate.

#### GROUP IV.

A European species, introduced upon this continent, represents this group in our fauna. The body is oval, very slightly convex, densely rather finely punctured and pubescent above. The lateral margin of the elytra is acute and the marginal sulcus, as in Group III., is not removed from the margin; the inferior margin of the epipleuræ becomes obsolete near the tip, without, however, uniting with the upper margin, as it does in those genera in which the epipleuræ do not extend to the tip.

18. *G. xanthomelæna* Duftschm. Redt., Fauna Austr., 2d ed., 927, &c., &c.

*G. californiensis*† Fabr., Syst. El., ii. 488; Harris, Ins. Inj. Veg., 2d ed., 124; Fitch, Fifth Report on Noxious Insects of New York, No. 346.

*G. gelatinariæ* Fabr., Syst. El. i. 490; Oliv. Ent., vi. 32. (No. 93, 30,) pl. 3, fig. 37; (a dark colored variety.)

Maryland and Pennsylvania. Injurious to elm trees by the larvæ eating the young leaves. The fifth ventral segment of the male is deeply and acutely emarginate.

#### GROUP V.

Two elongate slightly convex species, found near the shores of the ocean, constitute this group. They are densely punctured above and moderately pubescent; the thorax is rounded on the sides, with the angles not at all prominent; the lateral margin of the elytra is obtuse, and but slightly prominent, becoming obsolete near the tip, and scarcely uniting with the inferior margin of the epipleuræ. The marginal sulcus is very narrow.

19. *G. maritima*, elongata, testacea, fusca, vel nigra, capite rude punctato, thorace brevi antrosum angustato, lateribus late rotundatis, angulis haud prominulis, basi utrinque oblique subtruncato, disco parum convexo, fortiter punctato, breviter canaliculato, utrinque vage foveato, angulis posticis obtusis explanatis, elytris dense subtilius punctatis, pube brevi pallida minus dense vestitis. Long. .30.

Abundant along the the sea coast from New York to Florida. Intermediate

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variations occur in which the thorax is partly testaceous, and the elytra black, with the margin and suture pale.

20. *G. morosa* Lec., Rep. Pacific R. R. Expl., 70.

One specimen found on salt marsh at San Francisco, Cal. Resembles a black individual of *G. maritima*, but the thorax is less narrowed in front, less rounded on the sides, and the hind angles are not flattened; the elytra are more coarsely punctured, and the pubescence is longer and nearly white.

#### TRIRHABDA Lec.

Body elongate, not very convex, finely punctured and pubescent. Front flat, with the usual impressions as in *Galeruca*; not at all carinate between the antennæ; maxillary palpi not very stout, with the last joint conical, acute, as long as the preceding, and not smaller than it at the base; antennæ with the third joint intermediate in size between the second and fourth. Prothorax with a large, transverse, broad impression, which is disposed to divide into three, being deeper at the middle and at the sides. Elytra distinctly margined at the sides, with the epipleuræ very narrow, and becoming indistinct about the middle. Anterior coxæ conical, prominent, contiguous; tibiæ not sulcate externally; unguis cleft at the tip, with the inner part a little shorter than the outer. The last ventral segment in the males is slightly emarginate.

These species are of large size: the head and thorax are pale, the former with an occipital, the latter with three discoidal black spots; the elytra are pale, with a broad sutural and discoidal black (or rarely green) stripes. In some species these vittæ coalesce, causing the margin only to remain pale.

The differences in the proportion of the joints of the antennæ and in the epipleuræ prevent these species from being retained in *Galeruca*. The genus does not appear to be represented in Europe.

The species may be distinguished as follows:

- Thorax smooth, polished, feebly impressed.....1. *nitidicollis*.
- Thorax more or less punctured;
- Lateral and apical margins of elytra yellow;
- Elytra extremely finely punctured;
- Vittæ black, generally uniting near the tip .....2. *canadensis*.
- Vittæ green or bronzed, entirely confluent.....3. *luteocincta*.
- Elytra moderately finely punctured;
- Vittæ blue, entirely confluent.....4. *flavolimbata*.
- Vittæ blue, gradually approaching behind;
- Larger, elytra more finely punctured.....5. *attenuata*.
- Smaller, elytra less finely punctured.....6. *convergens*.
- Vittæ black, gradually approaching behind .....7. *tomentosa*.
- Vittæ black, not united at tip.....8. *virgata*.
- Yellow margin of elytra not extending to the tip.....9. *brevicollis*.

1. *T. nitidicollis*, luteo-testacea, occipite subtiliter punctato, nigro-maculato, thorace latitudine vix duplo brevior, convexo lævi polito, angulis haud prominulis, disco utrinque oblique impresso, guttis tribus nigris signato, elytris subtiliter dense punctulatis et pubescentibus, vitta suturali alteraque submarginali angustis cyaneo-nigris mox ante apicem conjunctis; antennis fuscis. Long. .42.

One specimen collected in New Mexico by Mr. Fendler. Easily distinguished by the characters above given. The elytra are very little wider than the thorax, and the sutural angle is slightly prominent, while in all the following species it is rounded.

2. *T. canadensis*. *Galeruca canadensis* Kirby, Fauna Bor. Am., iv. 219.

A common species, extending from Lake Superior and the Mississippi Valley to the Pacific. The black vittæ are regular, and generally are united near the 1865.]

tip, though sometimes they are entirely separate. It is easily distinguished from all the following, except *T. luteocincta*, by the extremely fine punctation of the elytra.

The sculpture and form of the thorax is subject to some variation; there is sometimes an impressed dorsal line, and the angles are occasionally quite prominent.

3. *T. luteocincta*. *Galleruca luteocincta* Lec., Proc. Acad. Nat. Sci. Phila., 1858, 88.

Very abundant at San Diego, California, upon a species of *Artemisia*. I have also received it from Santa Cruz, Cal. The elytra are generally green or bronzed, with the sides and apex broadly margined with yellow; individuals occur, however, in which the vittæ are well defined, and which can only be distinguished from *T. canadensis* by the thorax being more shining, with larger scattered punctures, and by the color of the elytral vittæ, which are always dull black in the preceding, while they are greenish blue or bronzed in the present species.

4. *T. flavolimbata*. *Galleruca flavolimbata* Mannh., Bull. Mosc., 1843, 308.

Northern and middle California. For a type I am indebted to the kindness of Col. Motschulsky. Differs from the preceding by the elytra being of a beautiful blue color and less finely punctured. I have seen no variation in color, though specimens will probably occur having the blue disc of the elytra divided into vittæ.

5. *T. attenuata*. *Galleruca attenuata* Say, Journ. Acad. Nat. Sci., iii. 459; ed. Lec., ii. 223.

Kansas. Larger than the next species, and with the elytra more finely punctured, being in this respect intermediate between *T. flavolimbata* and *T. canadensis*. The discoidal vitta of the elytra is gradually widened behind, and becomes confluent with the sutural one about one-third from the apex, (very much as in *T. baccharidis*) in the two specimens before me.

6. *T. convergens*, testacea, pallide pubescens, occipite parce punctato nigro, thorace latitudine duplo brevior, angulis vix prominulis, disco parce grosse punctato, utrinque oblique profunde impresso, linea dorsali brevi impressa, maculis tribus magnis ornato, elytris fortius dense punctatis, vitta suturali alteraque discoidali latis cyaneis vel viridibus, hac pone medium sensim dilatata; pectore abdomineque sæpissime fuscis, antennis nigris basi testaceo-maculatis. Long. .24—.28.

Kansas; Nova Scotia, Mr. Ulke. A widely diffused species, easily recognized by its small size and rather coarse punctures.

The dorsal vitta of the elytra is dilated behind in most specimens, but does not render the pale vitta shorter than in other species but merely attenuates it behind the middle. In some of the specimens from Nova Scotia, the blue vittæ are not united even at the tip, thus showing the same variation already noted under *T. canadensis*.

7. *T. tomentosa*. *Chrysomela tomentosa* Linn., Syst. Nat., ed. 12mo., i. ii. 601. *Galleruca baccharidis* Weber., Obs. Ent., 57; Fabr., Syst. El., i. 480; Oliv. Ent., vi. 629, pl. 3, 34.

Occurs near the sea coast from New York to Florida. In all the specimens before me, the discoidal black vitta of the elytra is dilated behind, and becomes confluent with the sutural vitta about one-fourth or one-fifth from the apex. It is easily distinguished by the very prominent thoracic angles causing the sides to become quite sinuous. The description of Linnaeus, which is quite characteristic, seems to have been overlooked, except in the Melsheimer Catalogue.

8. *T. virgata*, testacea, subtiliter pubescens, capite parce punctato, oc-

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capite nigro, thorace latitudine duplo brevior, angulis parum prominulis, disco vage punctato, utrinque profunde oblique impresso vix canaliculato, maculis tribus magis nigris ornato, elytris dense punctatis, vitta suturali alteraque submarginali latis nigris apice haud conjunctis; antennis nigris basi testaceo-maculatis; subtus fusco-testacea incisuris tarsorum obscuris. Long. .36.

Middle and Southern States. Distinguished from *T. baccharidis* by its smaller size, not prominent thoracic angles, and not convergent elytral vittæ. Resembles in elytral markings *T. canadensis*, but at once known by the more strongly punctured elytra.

9. *T. brevicollis*, fusco-testacea, occipite parce punctato nigricante, thorace latitudine triplo brevior, angulis anticis prominulis, disco rugose punctato utrinque profunde impresso, maculis tribus magnis nigris ornato, elytris confertissime subtilius punctatis, vitta suturali alteraque laterali latis nigris; margine laterali a humero usque ad medium testaceo; antennis nigris, articulis baseos subtus testaceis; corpore subtus fusco, pedibus testaceis, fusco-maculatis. Long. .31—.38.

Abundant in the Southern States, near the sea coast, one specimen from Kansas. Easily known by the very short thorax and by the black vitta extending to the lateral margin of the elytra, from the middle to the apex, which is therefore not margined with yellow, as in the other species.

#### MONOXIA Lec.

This genus contains small testaceous species, densely clothed with yellow hair, and easily recognized by the unguis being neither cleft, nor appendiculate.

The body is elongate, convex; the head is destitute of the usual impressed lines, the front narrow, not carinate; the maxillary palpi are rather slender, with the last joint conical, acute, and a little longer than the preceding. The antennæ are stout, with the third joint longer than the fourth; the second joint is half as long as the third. The thorax is rounded on the sides, with the angles prominent, and the disc broadly channelled, with two discoidal impressions. The elytra are wider than the thorax, distinctly margined, as in the smaller species of *Galleruca*, with the epipleuræ sharply defined, and extending to the tip. Pygidium perpendicularly deflexed in both sexes. Front coxæ contiguous, conical, prominent; tibiæ not sulcate externally, unguis slender, acute, not toothed, nor dilated at base, in one section, with a small acute tooth not divergent as in *Galleruca* in the second section. The deflexed pygidium readily distinguishes this genus, and gives to the ventral surface somewhat the appearance observed in genera allied to *Clythra*.

- A. Ungues slender and entirely simple;
  - Angles of prothorax very prominent..... 1. *angularis*.
  - Angles of prothorax not prominent;
    - Elytra not impressed..... 2. *obtusa*.
    - Elytra impressed..... 3. *guttulata*.
- B. Ungues stouter, with an acute tooth near the tip;
  - Elytra uniformly convex..... 4. *debilis*.
  - Sides compressed, disc obliquely impressed;
    - Elytra strongly punctured..... 5. *conspua*.
    - Elytra finely punctured..... 6. *sordida*.

1. *M. angularis*. *Galleruca angularis* Lec., Proc. Acad. Nat. Sci. Phil., 1859, 90.

California, near San Francisco? given me by Mr. S. S. Rathvon. Easily distinguished by the very prominent angles of the prothorax. The elytra are finely and densely punctured, and not impressed.

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2. *M. obtusa*, testacea, pallide pubescens, thorace fortiter dense punctato, latitudine duplo brevior, lateribus rotundatis, angulis posticis obtusis, apice summo dentiformi prominulo; disco canaliculato et utrinque late impresso, elytris dense punctatis, punctis antice fortioribus; antennis extrorsum, pectore abdomineque infuscatis. Long. .20.

One specimen from Andover, Mass., (Mr. Sanborn,) and two from Kansas. Of the same size as the preceding and following, but differs from *M. angularis* by the angles of the thorax not being prominent; from *M. guttulata* by the elytra not being impressed at the sides and on the disc; and from both by the elytra being not distinctly dotted with black. The punctuation is stronger than in *M. angularis*, and about the same as in *M. guttulata*. The disc of the prothorax is sometimes slightly fuscous.

3. *M. guttulata*. *Galleruca guttulata* Lec., Rep. Pacific R. R. Expl., 70.

One specimen found by me at San Francisco. Similar in size and shape to *M. angularis*, but the angles of the thorax are not prominent, and the elytra are compressed at the sides, and obliquely impressed behind the humeral elevations.

4. *M. debilis*, pallide testacea, dense pallide pubescens, thorace latitudine duplo brevior, lateribus rotundatis, angulis posticis minutis prominulis, disco dense punctato late canaliculato utrinque vage impresso, elytris thorace latioribus, profunde punctatis, punctis antice fortioribus, punctis parvis nigris serie 4-plici utrinque ornatis, transversim convexis; antennis extrorsum fuscis. Long. .15—.18.

New Mexico, Mr. Ulke. The pubescence is dense and somewhat silvery. The black dots of the elytra are minute, and those of the subsutural series usually coalesce, forming a narrow, abbreviated line; the humeri are prominent and marked with a larger black spot.

The fifth ventral segment of the male is deeply and narrowly incised.

This species most closely resembles in appearance *M. obtusa*, but the claws are distinctly croft, with the inner portion acute and shorter than the outer one.

I am disposed to think that *G. puncticollis* Say, (Journ. Acad. Nat. Sci., iii. 458; ed. Lec., ii. 222,) is allied to this species, but the elytra are described as having two vittæ on each, which are frequently obsolete, and the tibiæ and tarsi are black. The comparison made by Say with *G. baccharidis*, to which it has no relation whatever, has rendered the species obscure.

5. *M. consputa*. *Galleruca consputa* Lec., Rep. Pacific R. R. Expl., 70.

San Jose and San Francisco, Cal., on oak leaves. Smaller and narrower than *G. debilis*, with the elytra coarsely punctured, the sides compressed and impressed, and the disc obliquely impressed behind the humeri.

6. *M. sordida*. *Galleruca sordida* Lec., Proc. Ac. Nat. Sc. Phil., 1858, 88. Colorado Desert, California, two specimens. Very similar in form and color to *G. consputa*, but the elytra are finely punctured, with the punctures almost concealed by the dense golden pubescence.

The fifth ventral segment of the male in both species is incised at the tip.

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**Prodromus of a Monograph of the Species of the Tribe ANOBIINI, of the Family PTINIDÆ, inhabiting North America.**

BY JOHN L. LE CONTE, M. D.

In the classification of the Coleoptera of North America, published by the Smithsonian Institution, I proposed, in 1862, an arrangement of the insects allied to the old genus *Anobium*, by which the number of genera was

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